

REMARKS

This application has been reviewed in light of the Office Action dated April 7, 2004. Claims 31-37 are pending in this application and have been added to provide Applicant with a more complete scope of protection. Applicant notes that these claims are directed to the First Species, shown in Figures 1-5, and elected in the Preliminary Amendment and Response to Election-of-Species requirement dated February 6, 2004. Claims 1-30 have been cancelled, without prejudice or disclaimer of subject matter. Claims 31 and 34 are in independent form. Favorable reconsideration is requested.

An Information Disclosure Statement, citing U.S. Patent No. 4,707,744 (Kimata et al.), is attached.

The Office Action rejected Claims 1, 3, 7-11, 13, 16, 17, 19, and 23-28 under 35 U.S.C. §§ 102(a) and (e) as being anticipated by U.S. Patent No. 5,892,541 (Merrill). Cancellation of Claims 1, 3, 7-11, 13, 16, 17, 19, and 23-28 renders their rejections moot.

The aspect of the present invention set forth in Claim 31 is a method of driving a solid image pickup device comprising a photoelectric conversion unit, a charge-voltage conversion unit for converting electric charges from the photoelectric conversion unit into voltage signals, a signal amplification means for amplifying the voltage signals generated in the charge-voltage conversion unit, and a charge transfer means for transferring photoelectric charges from the photoelectric conversion unit to the charge-voltage conversion unit. The method includes the steps of performing a primary readout operation of transferring a part of the photoelectric charges accumulated in the photoelectric conversion unit in a readout period from the photoelectric conversion unit to

the charge-voltage conversion unit, and performing at least one other readout operation of transferring the rest of the photoelectric charges from the photoelectric conversion unit to the charge-voltage conversion unit.

An object of the present invention is to solve a problem that a signal transfer from a photoelectric conversion unit to a charge-voltage conversion unit is not sufficiently performed by the lowering of the voltage of a power source.

The present invention having the above-mentioned features shows the specific effect that without leaving signal charges in the photoelectric conversion unit, all signal charges are read out to the charge-voltage conversion unit by performing two or more readout operations with the charge transfer means without breaking signals accumulated in the photoelectric conversion unit in a single exposure period (i.e., without resetting the photoelectric conversion unit).

Applicant submits that Claim 31 is allowable over the cited prior art at least because it includes a charge transfer means provided between a photoelectric conversion unit and a charge-voltage conversion unit. Support in the specification for the features of Claim 31 can be found at least from page 11, line 26, to page 22, line 21.¹

Merrill, as understood by Applicant, relates to an imaging system and method for increasing the dynamic range of an array of active pixel sensor cells. Merrill discusses successively reading out photoelectric charges accumulated in a photodiode for different exposure periods, enlarging the dynamic range of a photodiode, and resetting, after every read out operation, the photodiode. In Merrill, leakage of the accumulated

^{1/}It is to be understood, of course, that the scope of the claims is not limited to the details of this embodiment.

charge in the middle of a transfer is prevented by reading out signals from different accumulation times and adding the signals. Applicant submits, however, that nothing has been found in Merrill that would teach or suggest a charge transfer means for transferring photoelectric charges from the photoelectric conversion unit to the charge-voltage conversion unit, as recited in Claim 31.

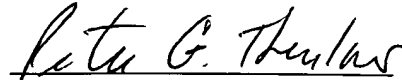
Independent Claim 34 is a device claim that corresponds to method Claim 31, and is believed to be patentable for at least the same reasons as discussed above in connection with Claim 31.

The other claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual consideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and the allowance of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

A handwritten signature in cursive script, reading "Peter G. Thurlow".

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